

Introductory notes

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In this talk I will overview a brief history of fuel cells and pressing questions that we need to answer to understand their work in depth. I will focus on what various disciplines, including physics, can do to help to improve fuel cells. Some material and ideas I will be talking about can be found in review articles:

Eikerling M., Kornyshev A.A., Kulikovskiy A.A.

Physical modeling of fuel cells and their components

in: *Encyclopedia of Electrochemistry*, 5, A. Bard et al. (eds.), Wiley-VCH, New York (2007), Chapter 8, 1-90.

Eikerling M., Kornyshev A.A., Kucernak A.R.

Water in polymer electrolyte fuel cells: Friend or foe?

Phys. Today **59**, 38-44 (2006).

Eikerling M., Kornyshev A.A., and Kulikovskiy A.A.

"Can theory help to improve fuel cells?"

Fuel Cell Review, **1**, 15-24 (2005).